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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : A41B	A2	(11) International Publication Number: WO 00/07468 (43) International Publication Date: 17 February 2000 (17.02.00)
(21) International Application Number: PCT/IL99/00434 (22) International Filing Date: 5 August 1999 (05.08.99) (30) Priority Data: 125695 7 August 1998 (07.08.98) IL (71)(72) Applicant and Inventor: GILOH, Tamar [IL/IL]; Hahis- tadrut Street 19A, 45270 Hod Hasharon (IL). (74) Agents: SANFORD, T., Colb et al.; Sanford T. Colb & Co., P.O. Box 2273, 76122 Rehovot (IL).		(81) Designated States: AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>Without international search report and to be republished upon receipt of that report.</i>
(54) Title: PROTECTIVE UNDERGARMENT (57) Abstract A protective undergarment including an integrally formed undergarment body formed of a liquid impermeable material, and an absorptive pad associated with the integrally formed undergarment body.		

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PROTECTIVE UNDERGARMENT

FIELD OF THE INVENTION

The present invention relates to protective undergarments generally as well as to methods for manufacture thereof.

BACKGROUND OF THE INVENTION

Various types of protective undergarments are known in the patent literature. The following patents and patent applications and the references cited therein are believed to represent the state of the art: U.S. Patent 5,098,419; PCT Published Patent Application WO 96/36248 and European Patent 327,823.

SUMMARY OF THE INVENTION

The present invention seeks to provide a protective undergarment which is generally lighter and more comfortable than conventional protective undergarments and which can be manufactured in large quantities at relatively low cost.

There is thus provided in accordance with a preferred embodiment of the present invention a protective undergarment including an integrally formed undergarment body formed of a liquid impermeable material, and an absorptive pad associated with the integrally formed undergarment body.

Preferably, the undergarment body includes a first portion which is formed with multiple perforations to permit passage of perspiration therethrough, and a second portion which is substantially not perforated, so as to prevent passage of body fluids therethrough.

In accordance with a preferred embodiment of the present invention the absorptive pad is associated with the undergarment body at the second portion.

Preferably, the second portion extends beyond the absorptive pad.

There is additionally provided in accordance with a preferred embodiment of the present invention a protective undergarment comprising an integrally formed undergarment body formed of a liquid impermeable material, the undergarment body including a first portion which is formed with multiple perforations to permit passage of perspiration therethrough, and a second portion which is substantially not perforated, so as to prevent passage of body fluids therethrough.

Preferably, the liquid impermeable material is latex.

Alternatively, the liquid impermeable material is silicone rubber.

In accordance with a preferred embodiment of the present invention, the undergarment body has a thickness of approximately 10 microns.

Preferably, the protective garment also comprises an absorbent pad fixed to the undergarment body.

The protective undergarment may be a brassiere, underpants or any other suitable garment

5 The protective undergarment may have fibers adhered to at least one surface of the undergarment body

In accordance with one embodiment of the present invention, the absorbent pad includes a portion extending downward from the crotch along the thigh.

10 There is additionally provided in accordance with a preferred embodiment of the present invention a method of manufacture of protective undergarments comprising the steps of forming an undergarment body of a liquid impermeable material, and forming multiple perforations on a first portion of the undergarment body to permit passage of perspiration therethrough

15 Preferably, the step of associating an absorbent pad with a second portion of the undergarment body

There is also provided in accordance with a preferred embodiment of the present invention a method of manufacture of protective undergarments comprising the steps of forming an undergarment body of a liquid impermeable material, and fixedly associating an absorbent pad with the undergarment body

20 Preferably, the associating step comprising forming the undergarment body over a portion of the pad

Preferably, the method also includes the step of forming the undergarment body over an absorbent pad, so as to fix the pad to the undergarment body.

25 Additionally in accordance with a preferred embodiment of the present invention, the method includes the step of adhering cotton fibers to at least one surface of the undergarment body

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be understood and appreciated more fully from the following detailed description, taken in conjunction with the drawings in which:

30 Fig. 1A, 1B, 1C, 1D, 1E, 1F, 1G, 1H and 1I are illustrations of a method for producing protective undergarments in accordance with a preferred embodiment of the present invention; and

Fig. 2 is a simplified illustration of protective undergarments produced generally by the method of Figs. 1A - 1F in accordance with a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

Reference is now made to Fig. 1A, 1B, 1C, 1D, 1E, 1F, 1G, 1H and 1I are simplified illustrations of a method for producing protective undergarments in accordance with a preferred embodiment of the present invention. The invention is described hereinbelow with reference to Figs. 1A - 1I, with specific reference to underpants, it being appreciated that the invention applies equally to any other suitable undergarment.

As seen in Fig. 1A, a three dimensional garment form 10 is provided on which an array 12 of protrusions 14, such as needles, is formed in the general shape of underpants to be formed. The crotch area 16 of the underpants is preferably not formed with protrusions 14. The remainder of the form 10 is preferably coated with a non-adhesion substance, such as TEFLON R.

As shown in Fig. 1B, garment form 10 is preferably dipped in a liquid 18, such as latex or silicone, which when allowed to dry, forms a stretchable, light weight garment 18 over array 12 and crotch area 16. It may be appreciated that the provision of protrusions 14 causes the garment 18 to be perforated except at crotch area 16. Thus the garment 18 is "breathable" except at the crotch area 16, where it is liquid impermeable.

In accordance with a preferred embodiment of the present invention, as illustrated in Fig. 1C, an absorptive pad 20 is associated with the light weight garment 18 at the crotch area 16. It may be associated by the use of an adhesive, but is preferably attached to the remainder of garment 18 by virtue of the fact that the liquid is allowed to dry on the form 10 in engagement with the absorptive pad 20.

Prior to removal of the garment 18 from the form 10, the exterior surface of the garment on the form 10, which will eventually be turned inside-out to form the interior surface, is preferably sprayed with adhesive 22, as shown in Fig. 1D and thereafter with cotton fibers 24 or any other suitable material, as indicated in Fig. 1E, thereby to provide a comfortable and non-stick skin engaging surface. Preferably pad 20 is covered during the steps of Figs. 1D and 1E with a cover 26, which extends somewhat beyond the pad, so as to prevent liquid migration from the pad to the cotton fibers.

The resulting garment 30 may then be removed from the form 10, as seen in Fig. 1F and turned inside out. The outer surface of garment 30 may be coated or otherwise covered with cotton fiber or any other suitable material and finished in an appropriate manner.

5 The completed garment 40, as seen in Fig. 1G, is preferably extremely light weight, low cost, stretchable, underpants, which is perforated generally except at the crotch area and which is preferably integrally formed with an internal absorptive pad at the crotch area. The garment is preferably formed of an elastic material, such as latex or silicone and has a thickness of less than 10 microns. In accordance with a preferred embodiment of the present invention, as seen in Fig. 1H, a tear region 42 may be incorporated in the garment, such as at a
10 side thereof. This enables ease of removal of the garment, by tearing it at region 42. Once removed the torn, worn garment may be disposed of, as illustrated in Fig. 1I.

As can be seen from Fig. 2, the garment may be underpants 50, a brassiere 60, or any other suitable garment. It is noted that the pad 62 of the underpants 50 may have a portion which extends downwardly along the wearer's legs.

15 It will be appreciated by persons skilled in the art that the present invention is not limited by what has been particularly shown and described hereinabove. Rather the scope of the present invention includes variations and modifications of the various features described in the specification and shown in the drawings which may occur to a person of ordinary skill in the art upon reading the foregoing description and which are not in the prior art.

5
C L A I M S

What is claimed is:

1. A protective undergarment comprising:
an integrally formed undergarment body formed of a liquid impermeable
5 material; and
an absorptive pad associated with the integrally formed undergarment body.
2. A protective undergarment according to claim 1 wherein said undergarment
body includes:
a first portion which is formed with multiple perforations to permit passage of
10 perspiration therethrough; and
a second portion which is substantially not perforated, so as to prevent passage
of body fluids therethrough.
3. A protective undergarment according to claim 2 wherein said absorptive pad is
associated with said undergarment body at said second portion.
- 15 4. A protective undergarment according to claim 3 wherein said second portion
extends beyond said absorptive pad.
5. A protective undergarment comprising an integrally formed undergarment body
formed of a liquid impermeable material, the undergarment body including:
a first portion which is formed with multiple perforations to permit passage of
20 perspiration therethrough; and
a second portion which is substantially not perforated, so as to prevent passage
of body fluids therethrough.
6. A protective undergarment according to claim 1 wherein said liquid
impermeable material is latex.
- 25 7. A protective undergarment according to claim 1 wherein said liquid
impermeable material is silicone rubber.
8. A protective undergarment according to claim 1 wherein said undergarment
body has a thickness of approximately 10 microns.
9. A protective undergarment according to claim 5 and also comprising an
30 absorbent pad fixed to the undergarment body.
10. A protective undergarment according to claim 1 wherein said undergarment
body is a brassiere.

11. A protective undergarment according to claim 1 wherein said undergarment body is underpants.

12. A protective undergarment according to claim 1 and also comprising fibers adhered to at least one surface of the undergarment body.

5 13. A protective undergarment according to claim 1 wherein said absorbent pad includes a portion extending downward from the crotch along the thigh.

14. A method of manufacture of protective undergarments comprising the steps of:
forming an undergarment body of a liquid impermeable material; and
forming multiple perforations on a first portion of the undergarment body to
10 permit passage of perspiration therethrough.

15. A method of manufacture according to claim 14 and including the step of associating an absorbent pad with a second portion of said undergarment body.

16. A method of manufacture of protective undergarments comprising the steps of:
forming an undergarment body of a liquid impermeable material; and
15 fixedly associating an absorbent pad with said undergarment body.

17. A method according to claim 15 wherein said associating step comprising forming said undergarment body over a portion of said pad.

18. A method of manufacture of protective undergarments according to claim 15 wherein said liquid impermeable material is latex.

20 19. A method of manufacture of protective undergarments according to claim 15 wherein said liquid impermeable material is silicon rubber.

20. A method of manufacture of protective undergarments according to claim 14 wherein said undergarment body has a thickness of approximately 10 microns.

21. A method of manufacture of protective undergarments according to claim 14
25 and also comprising the step of forming the undergarment body over an absorbent pad, so as to fix the pad to the undergarment body

22. A method of manufacture of protective undergarments according to claim 14 and also comprising adhering cotton fibers to at least one surface of the undergarment body.

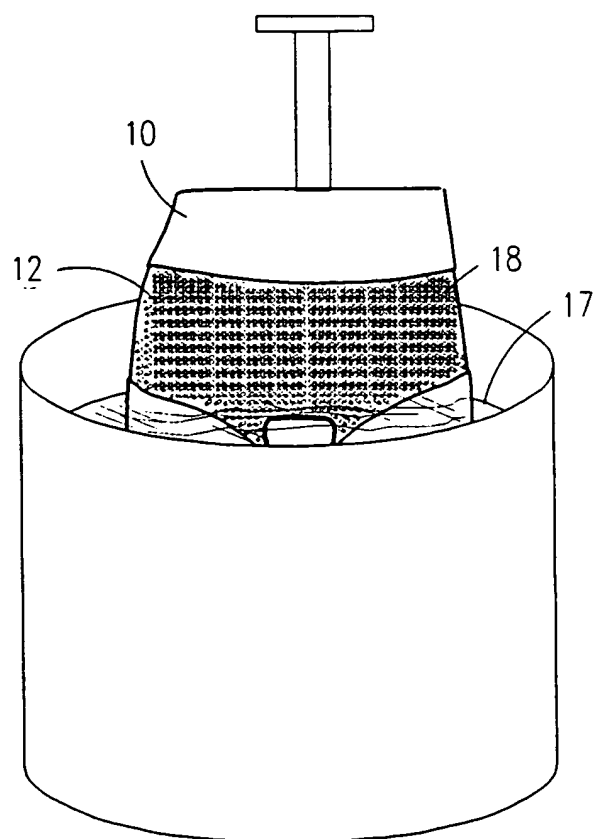
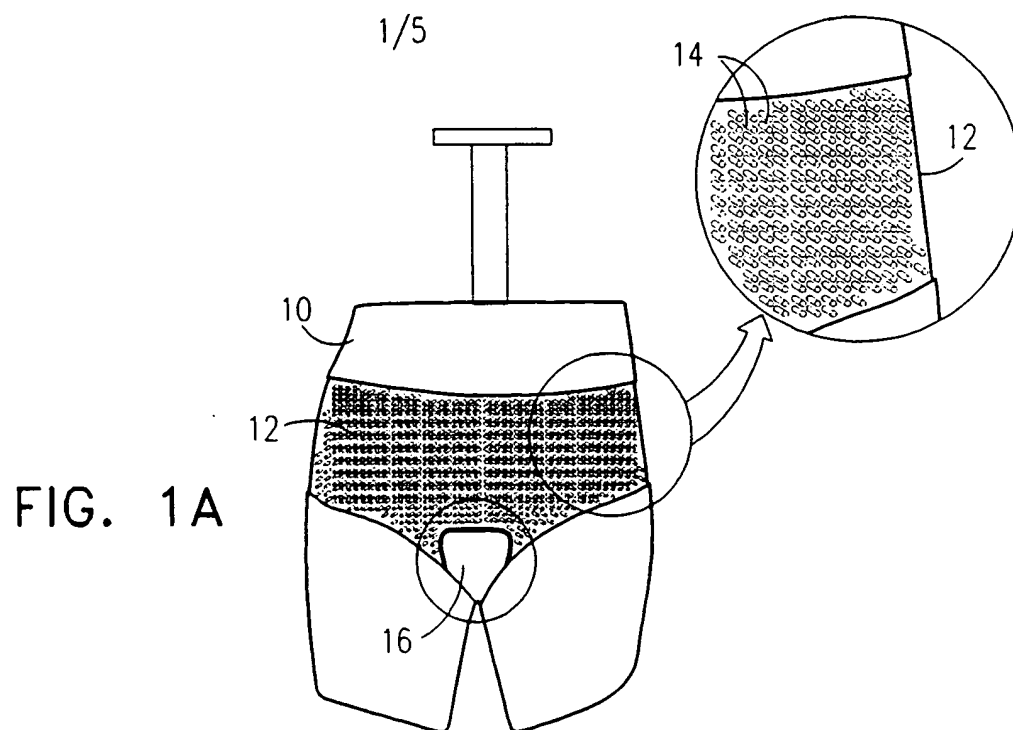


FIG. 1B

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FIG. 1C

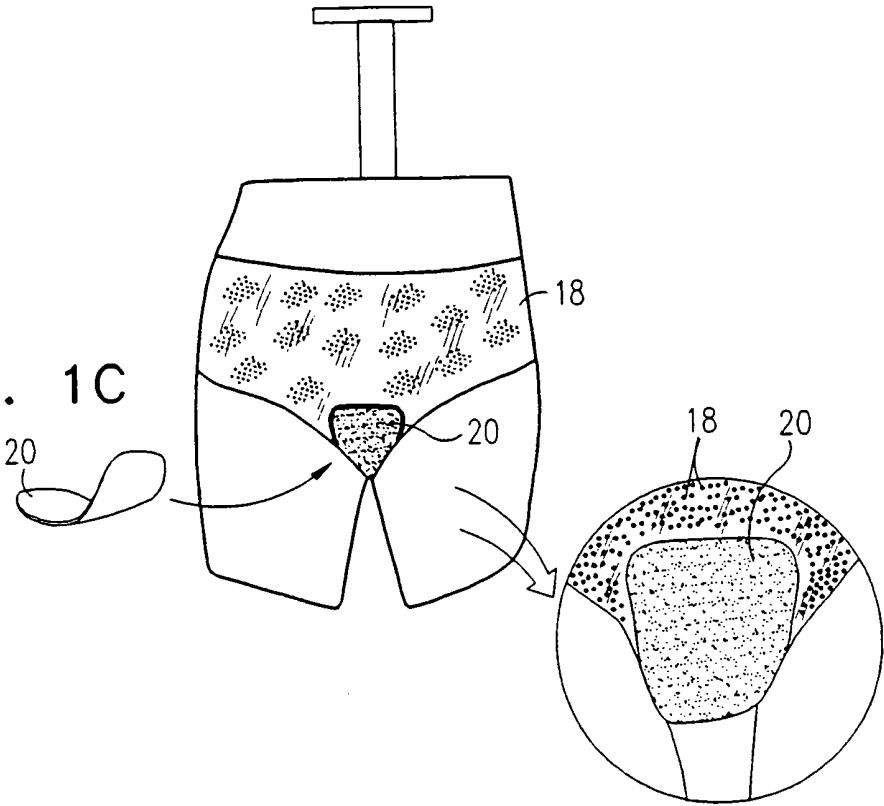
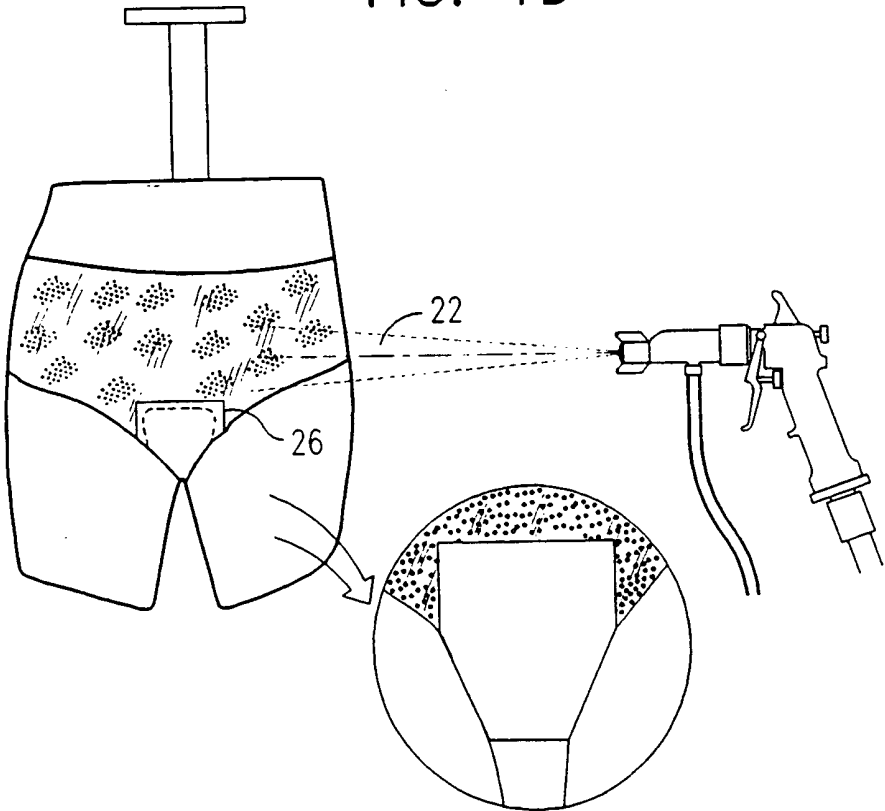


FIG. 1D



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FIG. 1E

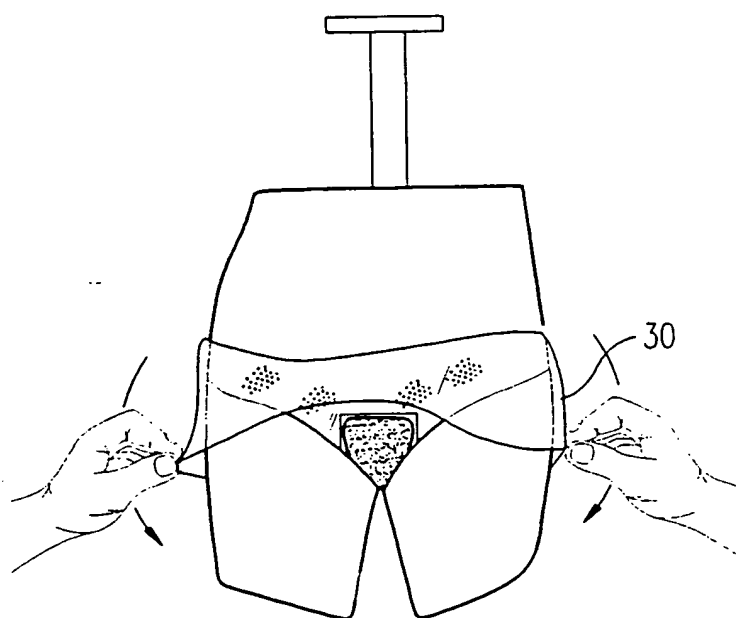
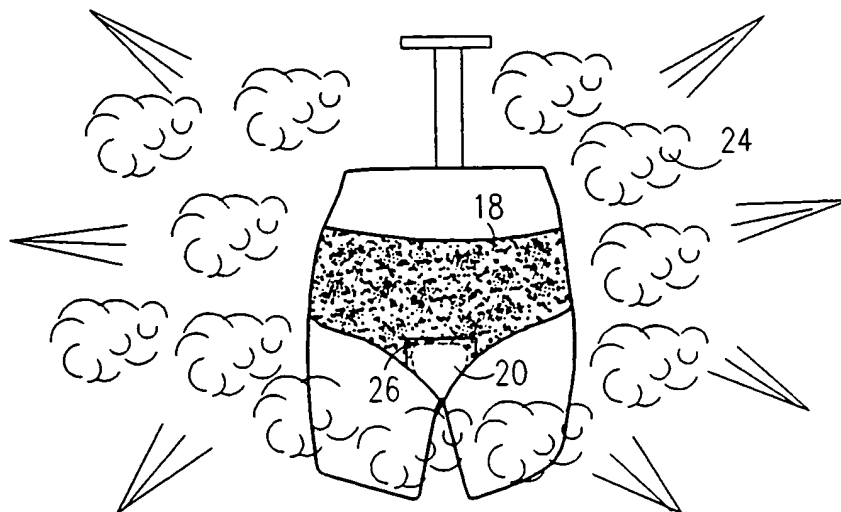


FIG. 1F

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FIG. 1G

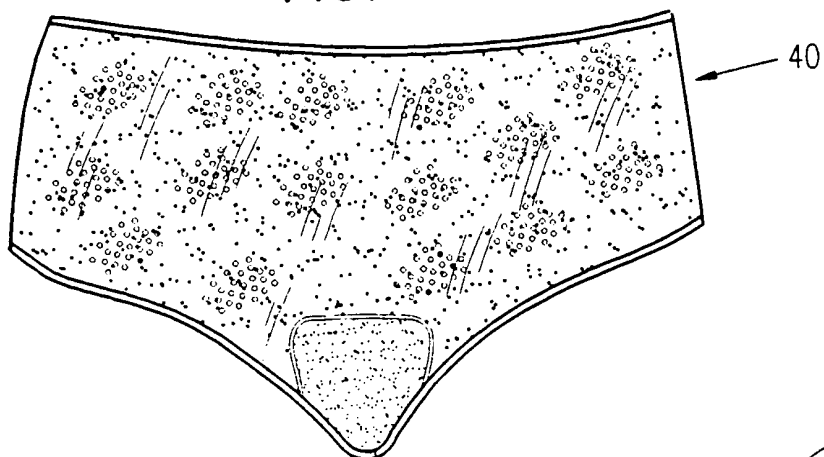


FIG. 1H

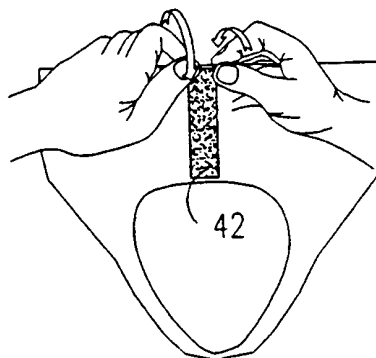


FIG. 1I



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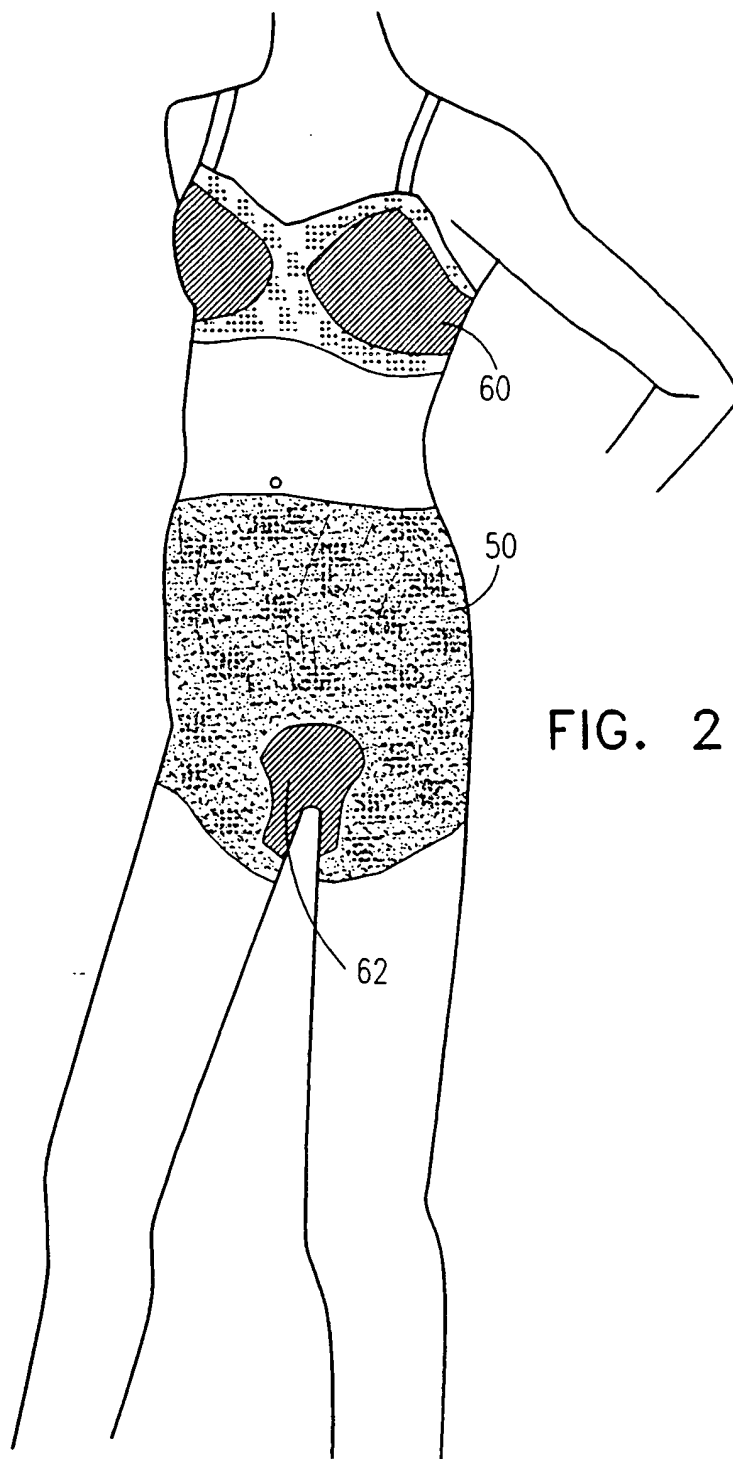
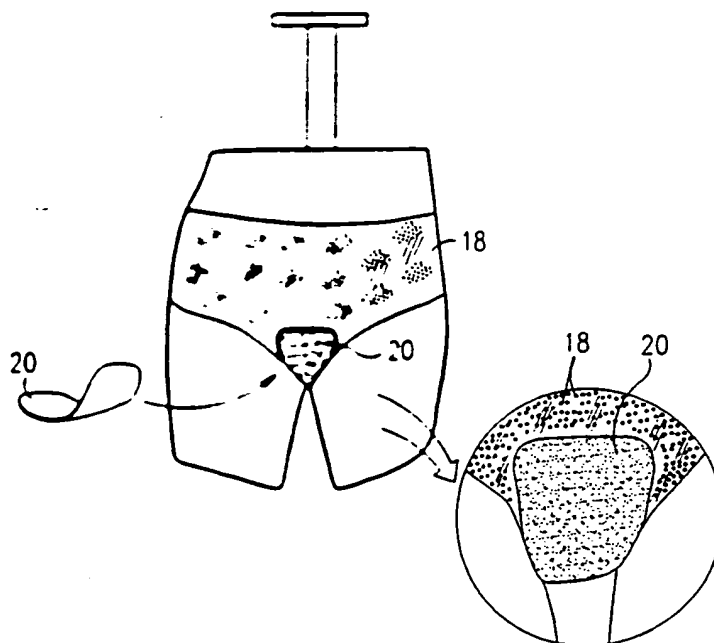


FIG. 2

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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : A61F 13/15, 13/20	A3	(11) International Publication Number: WO 00/07468 (43) International Publication Date: 17 February 2000 (17.02.00)
(21) International Application Number: PCT/IL99/00434 (22) International Filing Date: 5 August 1999 (05.08.99) (30) Priority Data: 125695 7 August 1998 (07.08.98) IL (71)(72) Applicant and Inventor: GILOH, Tamar (IL:IL); Hahis- ladrut Street 19A, 45270 Hod Hasharon (IL). (74) Agents: SANFORD, T., Colb et al., Sanford T. Colb & Co., P.O. Box 2273, 76122 Rehovot (IL).		(81) Designated States: AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> (82) Date of publication of the international search report: 17 August 2000 (17.08.00)

(54) Title: PROTECTIVE UNDERGARMENT**(57) Abstract**

A protective undergarment including an integrally formed undergarment body (18) formed of a liquid impermeable material, and an absorbent pad (20) associated with the integrally formed undergarment body (18).

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/IL99/00434

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61F 13/15, 20

US CL : 604/393

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 604/393, 385.07, 394, 395.01, 396; 450/37

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,149,336 A (CLARKE et al.) 22 September 1992, Fig. 5 and col. 7, lines 45-55.	1, 10, 12, 16
X	RE 35,687 A (IGUAE et al.) 09 December 1997, Figs. 1-6, col. 2, lines 45-56 and col. 3, lines 60-63.	1-9, 11-22
X	US 2,796,064 A (GREEN et al.) 18 June 1957, Figs. 1-4 and col. 1, lines 15-20 and 52-60.	1-9, 11-22
X	US 4,589,876 A (VAN TILBURG) 20 May 1986, Fig. 11.	1-9, 11-22



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